

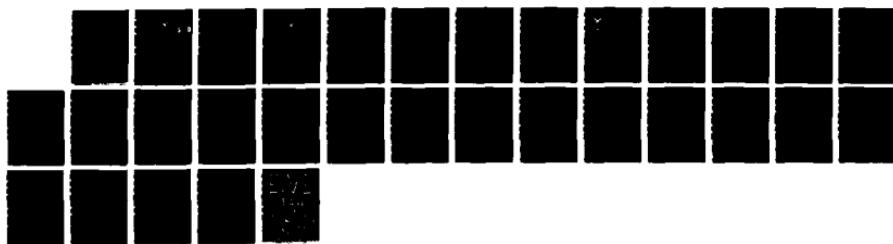
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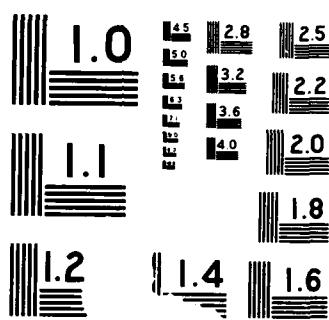
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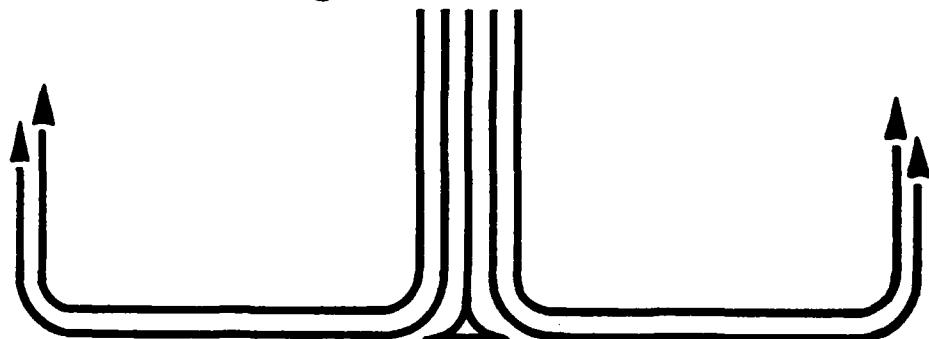
STUDENT REPORT

CONVERTING THE IN-FLIGHT FUND (IFF),
A NON-APPROPRIATED FUND INSTRUMENTALITY,
TO A COMPUTERIZED OPERATION

MAJOR DAVID P. SHERMAN

88-2385

"insights into tomorrow"



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CONVERTING THE IN-FLIGHT FUND (IFF),
A NON-APPROPRIATED FUND INSTRUMENTALITY,
TO A COMPUTERIZED ORGANIZATION

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Submitted to the faculty in partial fulfillment of
requirements for graduation.

**AIR COMMAND AND STAFF COLLEGE
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PREFACE

The main purpose of this paper is conduct the appropriate research to enable the In-Flight Fund (IFF) of the 89th Military Airlift Wing (MAW) to convert its current and future functions to a more modern, efficient operation through computerization. The 89th MAW has a mission with a direct impact on world affairs, and the IFF is an integral part of the organization. Currently, the IFF conducts business in a manner that is labor intensive, repetitive, and less than optimally efficient. This project takes an in-depth look at the requirements and objectives of the IFF and, through research and consultation, applies these results to the equipment available in today's market that best meets the needs. The final chapter of this report provides several options to explore the possibilities of funding the eventual equipment procurement for a a non-appropriated fund instrumentality.

ABOUT THE AUTHOR

Major David P. Sherman most recently completed a three year assignment as a navigator flying VC-137 and VC-135 aircraft with the 89th Military Airlift Wing at Andrews AFB. During this assignment, Major Sherman served as the Wing Chief of Planning and Programming, Chief of the In-Flight Fund (IFF), and completed a six-month temporary assignment to the U.S. State Department. As Chief of the IFF, he rewrote the governing regulation and implemented numerous changes to include moving the physical location of the organization, streamlining beverage service, and the collection of thousands of dollars in old outstanding debts that had been previously considered irretrievable. The author is aware of the benefits that could be derived from introducing this unique organization to the world of computers because of familiarity gained with various systems in previous assignments. Prior to the 89th MAW, Major Sherman was assigned in Plans and Operations and as the Executive Officer in the Colonels Group at HQ AFMPC. The preceding assignment was as Executive Officer for Current Operations at HQ MAC.

In June 1988, Major Sherman will graduate from Air Command and Staff College in residence and has already completed Air War College by correspondence.

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EXECUTIVE SUMMARY

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REPORT NUMBER 88-2385

AUTHOR(S) MAJOR DAVID P. SHERMAN, USAF

TITLE CONVERTING THE IN-FLIGHT FUND (IFF), A NON-APPROPRIATED FUND INSTRUMENTALITY, TO A COMPUTERIZED OPERATION

I. Purpose: To enable the In-Flight Fund (IFF) to convert its current and future operation to a computerized organization.

II. Problem: As an integral part of the important mission of the 89th Military Airlift Wing, the In-Flight Fund does not possess a computer system. Current operations are labor-intensive, repetitive, and less than optimally efficient.

III. Data: This project takes an in-depth look at the unique requirements and objectives of the IFF. The general fund management activities can be distilled into the categories of accounting, funds-handling, reporting, and corresponding. While recognizing that this description is over-simplified, the result still points toward the need for computerization to include, as a minimum, capabilities in data-base management, word processing, graphics, and capable printing. This report compiles research and consultations from various sources that provide current information concerning the available options in computer capability, reliability, and serviceability. Since cost is usually the major determinant in the final choice, this project provides useful data as well as several possible options for securing the funds.

Chapter One

INTRODUCTION

People don't work with data by themselves. In any organization they share it to accomplish the mission. Computers are not only affecting the transfer of data, but even the way we think about the mission and the world. At Andrews Air Force Base, the 89th Military Airlift Wing (MAW) has a mission with a direct impact throughout the world. The focus of this project will be to bring computerization to an important organization within the 89th MAW.

PRELIMINARY CONSIDERATIONS

Picking the "right" computer is no easy job when an organization recognizes the need to procure its first data automation equipment. The need becomes increasingly evident as an organization struggles to keep pace using numerous manually prepared documents in an environment where counterpart organizations transact business with the speed of computers. The speed increase is accomplished by using data processing equipment to compile, analyze, and process data, thereby eliminating wasted time, duplication, and manual repetition. This report will examine that premise in detail as it applies to the In-Flight Fund (IFF), a non-appropriated fund instrumentality in the 89th MAW. A short overview of the mission of the 89th MAW will help clarify some needs and constraints the IFF must consider prior to the final decision on the "right" equipment.

THE MISSION

The mission most commonly associated with the 89th MAW is presidential travel but, in fact, the wing makes an annual average of 2700 VIP departures worldwide. The aircrews provide safe and comfortable airlift service for travellers such as the President, Vice President, cabinet members, congressional members, military leaders, and heads of state of foreign governments. The comforts provided include in-flight food and beverage service at cost to the traveller. The money required to purchase bulk food and beverages in advance is usually not available from the sponsoring organization, but will be assessed to the individual passengers at the completion of the mission.

THE IN-FLIGHT FUND

The In-Flight Fund was established to provide, in advance, the money and alcoholic beverages required for each mission. The general fund management activities of the IFF include (21:1-7):

- Fund accounting and files maintenance
- Banking and investments
- Management of blanket purchase agreements through the base Non-Appropriated Fund Financial Management Office (NAFFMO)
- Post-mission billing to passengers
- Management of a substantial on-hand cash account
- Control of beverage stock and inventory
- Beverage and cash issue to mission crewmembers
- Receipt of payment for outstanding bills
- Transacting operating expense payments
- Mission purchase and sales records review
- Financial status reporting
- Maintenance of all documents as privileged information under the Freedom of Information Act (FOIA) (5. U.S.C. 552)

The initial challenge for this project will be to determine the data automation requirements for the IFF today with an eye toward future expanded capabilities. Chapter two will explore limitations of the current IFF fiscal system and provide known accounting requirements. The objective will be to identify areas of wasted manhours and inefficiencies through duplication of effort.

Chapter three will be a compilation of the related requirements in word processing, graphics, printer quality, calendar scheduling, inventory control, and reporting requirements. The focus will remain on identifying the needs with respect to streamlining future capabilities.

The planning, development, and validation stages will comprise chapter four. The author will consult with Air Force "experts" to strike a balance between IFF needs, existing software and hardware capabilities, and reasonable cost. Useful information from commercial vendors will also factor into the data gathering phase of this chapter.

Chapter five will be dedicated to determining the best available computer equipment with consideration to features, printer quality, future expansion, training time, and cost. A comparative array of equipment differences will be presented, since cost vs capability is recognized as the driving determinant for this project.

Finally, the toughest section of the project comprises chapter six. . . how to pay for the purchase? The author will outline a sequence of possible sources of funding.

The IFF provides a valuable service to some of the most important officials of the government and military. This project is intended to provide answers and recommendations for solving a data processing shortfall in this important Air Force organization.

Chapter Two

ACCOUNTING REQUIREMENTS

This chapter will outline known accounting requirements with a critical look at present procedures. While it would not be practical to identify each specific task, the author will analyze the general requirements necessary for the IFF to accomplish its mission.

THE ACCOUNTING CYCLE

As the organization exists today, the accounting cycle starts with the IFF capital fund. The IFF fund handlers provide a daily transaction/balance sheet to the IFF accountant. Items in the daily transaction/balance sheet include: (24:--)

- Cash drawer count
- Amount of cash disbursed
- Checks issued
- Beverages disbursed
- Cash returned from missions
- Beverages returned from missions
- Cash deposits into banking facilities
- Outstanding debt payments received
- Operational expenses paid out

These transactions are manually recorded on columned paper and forwarded along with actual mission fiscal transaction receipts and billing documents to the IFF accountant.

THE IFF ACCOUNTANT

The IFF accountant requires an expanded spreadsheet capability. The major functions in accounting include: (21:3-4; 24:--)

- Maintains and balances two separate savings accounts and an interest-bearing checking account
- Receives daily transaction reports from the IFF fund handlers
- Prepares and sends bills to offices or individuals for services rendered on mission aircraft
- Maintains accounts receivable ledger
- Accepts receipts of payment from mission passengers
- Sends notice of late payment for overdue outstanding debts

- Administers IFF operational expenses to include insurance payment and IRS tax stamp purchases
- Administers payment to IFF creditors to include liquor wholesalers and the base officers club
- Provides monthly accounting statements to the wing commander
- Provides quarterly financial reports to the IFF Council

COMPUTERIZED SPREADSHEET BENEFITS

Looking back, the appearance of spreadsheet software for computers contributed more to the legitimacy and proliferation of the office computer than any other single item. While many novices experimented with early personal computers, and office personnel became interested, the financial manager searched for a way to make the untidy and tedious task of financial planning easier. The repetitiveness and mass calculations needed by these people on a routine basis made them prime targets for anything that would their lives easier. Therefore, when electronic spreadsheet came along, the business financial manager jumped at the chance to try something to reduce this workload. As the means were proven to be successful, the idea of using the computer and spreadsheet software became popular. (4:10)

A remote computer terminal with spreadsheet features would enable the fund handlers to accomplish these tasks in a fraction of the time they presently take, especially since the fund handlers and accountant are located in separate buildings. Accuracy checks would occur as the data is input rather than discovering an imbalance at the close of the business workday. The information transfer would not be subjected to normal delays incurred with a typical base distribution system. Inventory control would provide real-time trend data rather than periodic inventory counts that discover low stock levels after they occur. Finally, historical data would be accessible to establish trends and guidelines for the required amounts of money and beverages to provide as an advance for missions. The idea here is that advance money that leaves the IFF and subsequently returns unused is unproductive. The computer can provide historical data in many formats with organizational efficiency as the key in each form.

DATABASE SYSTEMS

A computer data base system uses a collection of integrated data for a variety of related applications. (2:21) The IFF can conceivably develop several databases, each related to specific applications. For example, the IFF could develop a database of passenger accounts that would provide account audits, produce letters of indebtedness, and confirmation of payments received at timely intervals. Having information readily available and organized makes for an effective and efficient operation. Additionally, the manhours saved from not having to manually type each redundant letter and report can be employed productively in other areas.

The spreadsheet function could be tailored to replace the manually prepared monthly and quarterly cyclic reports. (1:5) Graphics capability would allow the IFF accountant to display statistical and numerical data in pictorial form. (12:2) A good report becomes even better when visual aids are included.

This chapter has presented an overview of current accounting functions of the IFF with a focus on future improvements. While the scope is narrow as presented, future applications can develop as on-line possibilities surface through actual operation. The IFF accountant will rapidly transition from manual compilations and tedious labor to accounting and systems management in the purest form. Chapter three will develop additional applications of data and word processing functions for the IFF.

Chapter Three

DATA AND WORD PROCESSING REQUIREMENTS

Investments in technology are based on tough decisions. . .and in this recessionary climate of Gramm-Rudman-Hollings budgetary constraints, controlling costs is imperative. Office automation, particularly for cost control, is genuinely breaking out of its formative years and the decisions made today will affect future capability. (23:--)

OBJECTIVES

For starters, one must analyze the requirement by defining the objectives. How will the system support the IFF (not vice versa as so frequently witnessed in other organizations)? The grand scale objectives are to increase efficiency, reduce labor-intensive functions, enhance communication of data and word processing, and automate report and correspondence generation. (5:11;22:--) We want to:

- Automate repetitive manual tasks
- Speed customer service
- Clean up the look and add graphics to reports
- Make letters to correspondents more accurate
- Distribute the workload more evenly
- Reduce turnaround time
- Acquire instant access to computerized files
- Eliminate paperwork backlog

The IFF, along with numerous other organizations since 1970, needs a better way to create and handle text. Further, the true function of office automation is to enhance the performance of an organization by rapidly and accurately processing statistical data and correspondence. (25:--) Aside from creating and using new information, the IFF must increase the effective use of information which has always been available. When a sprinter crouches at the starting line before a race, adrenalin is produced to speed up the flow of blood. But the goal of the runner is not to make the heart pound faster. The ultimate goal is to compete more effectively. The goal of office automation is to help the IFF make better use of human resources to achieve mission accomplishment.

OFFICE AUTOMATION

One of the most common applications of the computer is word processing. Most users approach their word processors as labor-saving devices that allow them flexibility. Word processors also forgive nontypists better than most modern typewriters, and permit them a good deal of creativity. (5:19) Currently, the IFF accountant manually processes every report and letter by originating each document on a typewriter that does not include memory capability. Word processing software enables an operator to take a prepared document, edit it, add or delete text, and move text within. The document then can be stored for future recall for reference or can be used as a template for like data.

Over the past decade, office automation has exploded into the world of business, to include the office functions of the military. For the IFF, the time has arrived to come to grips with automation.

IFF REQUIREMENTS VS APPLICATIONS

This chapter will attempt to peel away the layers of computer industry catchwords and buzzphrases to reach the core of matching the best available equipment with the distinct functional requirements of the IFF. Important applications of the computer include word processing, desk management, data processing, and graphics. These data automation features would prove invaluable when incorporated in the following list of representative requirements: (24:--)

- Establish and process accounts for each mission
- Publish policy changes
- Compile the annual financial report (with graphic depiction)
- Prepare professional quality correspondence to the offices of the senior executives of the government
- Publish required reports for distribution to the members of the IFF Council
- Computerize the 89th MAW Form 5, IFF Transaction Report
- Prepare and print accounts receivable billing data for each individual who received IFF services on a credit basis
- Maintain Air Force II assets as entity account separate from the IFF
- Establish a data base file to account for the disposition of items remaining from cancelled missions
- Prepare an automated standard audit format for the monthly, quarterly, and annual audits and inspections
- Program recurring correspondence such as Blanket purchase Agreements, insurance payments, and Tax Stamp purchases
- Establish automated accounts with external agencies such as the Andrews Command Post, the Presidential Pilot's Office, and the various military liaison offices
- Produce and update self-inspection reports
- Produce wing historical reports
- Establish an automated meeting and function calendar

The true function of office automation is to enhance the performance of an office team. (7:105) Computer equipment should not be procured to make more information available, but to enable the office to increase the effective use of information that has always been available. (7:4;22:--)

Office management is actually a series of tools used to enable the organization to effectively manage time. It is comprised of functions such as scheduling, calendar management, and suspense files. (5:15,16)

- Scheduling is simply maintaining a personal calendar within the computer. The function allows each member of the organization to schedule meetings and appointments without having to consult each individual for each function. It can compare calendars of the participants to find a common open period.
- The IFF requires meetings and reports that occur at several frequency intervals. The computer calendar would provide a ready access to ensure complete and accurate scheduling of events.
- The suspense files are reminders that one can generate for specific events. Automated financial reports can be prepared from routinely stored fiscal data whereas reports currently require research, manual data processing, and manual preparation.

A data base system is a software program that allows users to create and use files to maintain information in an organized manner. It can use a collection of integrated data for a variety of related applications. A typical data base system would allow the IFF to electronically file an account for each traveller. Inventory control would become automated with purchase orders produced at prescribed levels of stock exhaustion. Word and data processing is perhaps the greatest value to any organization, the IFF being no exception.

PERIPHERALS

A peripheral that many thought of as an expensive luxury several years back has become an absolute necessity in the computer environment. The printer is used with greater frequency today in business applications with the variety including fast-draft quality, dot-matrix units, slower letter-quality machines, to high-speed, high resolution graphics printers such as lasers. (25:--)

Graphic capability will allow the IFF to demonstrate statistical or numerical data in pictorial form. Financial reports will have more appeal if graphics are used to support the numerical data presented.

Tangible benefits and increased productivity tie directly to improvements in capabilities. (23:--) This chapter attempted to nail down the specific known functional requirements of the IFF and summarize standard automation applications.

Chapter Four

EQUIPMENT VALIDATION

Since chapters two and three described the reasons for moving toward a data automation system, it follows that this chapter should help the IFF decide, by accepting the premise, to make the smart choices in choosing features and capabilities that will work best for the organization. On average, administrative workers produce 45 new sheets of paper a day. (3:4) However, without automation, we don't handle all that paper (with its associated information) too well. Information is now recognized as a corporate resource. . . one that does not wear out, and even grows more valuable when used. (9:241) By choosing the appropriate office automation equipment, the IFF could realize an approximate reduction of 50% of the manhours currently required to produce repetitive, complex documents. (8:--;24:--)

VALID EXPECTATIONS

A broad overview of the fundamental data automation requirements compiled by distilling the known IFF tasks would include, but not be limited to, accumulate, create, record, organize, display, store, retrieve, transmit, interpret, and weed out information. (14:--)

Some of the benefits of installing a data automation system in the IFF include:

- Faster output of better-typed material
- Easier and faster revision of materials
- Less proofreading
- Less paper (documents can be stored electronically)
- Greater volume of output
- Instant originals printed at speeds of 450 words per minute
- Fast and accurate calculations
- Quick access to records for updating information

The IFF will reap the most benefits because products are often long documents that require numerous revisions. The system must be able to handle accounting, bookkeeping, inventory, data, and word processing. Therefore, the organization must pick the right system, the first time.

DEFINITIONS

Like a stereo system, a data automation system has a lot of components. One can buy a complete system with all the parts put together, or one can piece them together. A few general words about computers would be helpful in making the final selection.

Microcomputers are the smallest computers; they are newcomers to the field of data automation. Most often, they are thought of as single-user or "stand-alone" systems, but most can handle several users such as the IFF accountant and the IFF fundhandlers. (3:245) The past few years have seen the popularization of the microcomputer as the "personal computer." It is possible now to select from a large group of micros in a computer store and pick out the software packages that you want. (13:153) Aside from the size of their systems, how do computers differ? Different computer processors are described as having differences in power and capability. (13:171) The nitty gritty of Central Processing Units (CPUs) gets very technical. When one is looking for a business-application package such as word processing, you may not hear or understand much about them -- who wants to know about megahertz? For the most part one doesn't need to, expect perhaps, that the CPU dictates the speed at which the computer can handle data or text. (12:2;25:--) Since the IFF system will primarily be a single-user system, the speed of processing may not be the critical factor. (24:--)

Memory is another important consideration for choosing the correct data automation system. On the inside of the computer are two kinds of memory: Read Only memory (ROM) and Random Access Memory (RAM). RAM (memory the computer can read from, but cannot send text to) contains instructions or "programs" that are "hardwired" into your computer. They're present when you turn on the machine. These instructions include basic "foundation" information for the computer. Some systems contain more "firmware", as ROM is also called, than others. Some systems hold most of their instructions in firmware. ROM is sometimes called "non-volatile," because its contents remain when you turn off the system and don't have to be loaded from a disk each time you turn it on. (3:363)

RAM is the memory (or space) that you load your programs into from a disk, and which stores the text as you type it. This memory is sometimes called "volatile" because it is erased when you turn off the system. It's random because the computer can find what it wants fast, almost at random, anywhere in memory. (3:138-9)

Terms like 128K, 256K, 512K refer to the number of bytes, or characters, that can be stored in the computer's RAM memory. (A byte is eight on/off impulses, enough to code one character. The "K" stands for "kilobytes," or thousands of bytes. Actually, 1K is equal to 1024 bytes, but it's easier to think of them as rounded to thousands). (3:128)

The operator needs enough RAM to be able to hold both program and text. The size of the system, the size of the desired programs, and the size of the documents the organization requires will dictate how much memory one needs. When there's room for more text in memory, information doesn't have to be transferred back and forth from the disks as frequently. The time the computer spends communicating with the disk can seem significantly slow once you're used to a fast response between the keyboard and processor. (3:155)

Different computers handle memory differently. Some treat the space on disks as an extension of internal memory, allowing the operator to work with programs and documents that are larger than would normally fit into memory. The vendor should predict how much memory an organization should have for particular needs, whether more can be added, and what benefits are derived from adding more. (3:138-9)

Since one of the reasons for buying a computer is to be able to make changes to data later without typing the entire document, the computer can "save" it for the operator. Saving involves making a copy of the data to be stored on a "floppy diskette" or "hard disk". (3:112-3)

When in use by the computer, disks spin around inside a cabinet called a "disk drive." A mechanism in the drive reads information from the disks into the computer, or writes instructions from the computer onto the disks (input/output devices). (3:112-3)

By itself, a computer is a box of hardware -- nuts, bolts, circuits, metal, and plastic. Before it can do anything, the machine needs instructions, and those instructions come from programs. Programs are actually groupings of instructions. Often a number of programs are used together to provide "applications software." "Application" is the task that the computer is being used for, or applied to, and "software" is a general term for programs. Selecting software does not allow the pick of any package on the market. Software must be able to run on the system selected. (3:103)

Another essential component to the computer is the display monitor. The "tube" has become a more important part because where the ordinary, medium-resolution monochrome monitor was good enough for most users, the color graphics display has increasingly become a more important business system feature. (11:48) Improved graphics in software and increased creativity has motivated users to include color monitors and high-resolution monochrome displays in their computer configurations. (13:138)

PARAMETERS

Having crossed the hurdle of "computerese", let's recognize that the initial usefulness of a computer system depends on the ease with which a user can accommodate to it, its capability to perform necessary tasks reliably and thoroughly, and its efficiency in performing these tasks. Nothing is more counterproductive for the user than discovery that he must adjust major portions of his duties to accommodate the system. A system can be considered human-engineered (user friendly) if it provides a user flexibility to change important values, making the system accessible to alter the criteria as the situation demands.

The needs of the IFF, planned computer capability, and anticipated budget restrictions contribute to the final decision in procuring a data automation system. The key to each step in the planning-to-procurement process is to maintain the focus on the clearly defined organizational requirements. Unfortunately, the process of communicating important information from one person to another or from the user to the vendor can introduce confusion and, as a result, the system fails to support the objective. A common source of confusion arises from the need that is understated or simply too vague. To provide the IFF with the system it needs, this project strives to mesh the known requirements with the best available data automation system components that will meet the exact needs of this unique organization. The system will be required to provide not only initial usefulness on delivery, but continued usefulness over time as requirements change and grow.

Chapter Five

CHOOSING THE RIGHT EQUIPMENT

Considering the relatively small amount of time that small computers have been widely available, their rise in popularity has been meteoric. (10:14) For a few years after the introduction of the IBM PC, the business world couldn't seem to buy microcomputers quickly enough. (11:121) Microcomputers, which started as hobbyist's concerns invaded almost every type of business and office environment. (10:139) Led by Apple, Compaq, Tandy, and IBM, the number of vendors offering microcomputer wares was innumerable. (12:2) Then came the smaller clones and mail-order houses, and the market still seems vast enough to support them all. (10:115)

SOFTWARE

It's time to look under the hood. From discussions with the experts at Gunter AFS, AL and various vendors, the author will not attempt to distill a vast amount of facts and sales-talk into a clean, scientific matrix. (22:--) More useful for the individual will who eventually let the contract would be a simple explanation that extremes exist when considering cost, capabilities, reliability, and quality. Similar to looking for an automobile. . .there are trade-offs in every area, especially when cost is one of the variables. The user must decide organizational needs and then select the software that best fits the situation. Each program will have particular strong points and limitations.

Interviews with data automation experts at Gunter AFS, AL have formed the author's opinion that software requirement determination is the initial step in purchasing a computer system. (22:--)

Software defines what the computer is able to do and no computer, no matter how powerful and expensive, will achieve the ultimate goals of the organization without the existence of adequate software. (6:48-50)

The software of any computer is the valuable tool that allows the operator to organize data to meet the requirements of the mission. While the software programs available to perform each function separately are strong and specific, the IFF should consider the available integrated software programs.

The integrated concept is excellent and basically involves having several different types of packaged software, such as a word processor, a spreadsheet program, a Data Base Management System (DBMS), and graphics, all integrated into one package. Most integrated software packages have one predominant program with the other programs working within this framework.

Data-Base Management Systems (DBMS). Data-base management systems are made up of many pieces of information that have been entered into the computer. The IFF deals with a great deal of information that should be organized so that it is available at a moment's notice. Examples of the type of information include:

- Organizations that use the IFF services
- Individual accounts
- Mission contact names
- Mission historical data
- Financial data
- Report information

DBMS represents one of the primary uses of the computer. The ready access to data is vital to the decision making process. To be useful, this information must be readily accessible, relevant, presented in a useful format, and adaptable to changing circumstances. (4:10) Once the information is entered into a DBMS, the operator can access various formats of the stored information. DBMS organizes large amounts of information in one place to be retrieved according to the need. Mail-merge and list processing programs are functions included in the DBMS. (8:--)

Spreadsheet. A spreadsheet is a powerful tool used for applications involving data processing, accounting, ledger applications, and inventory control. (14:--)

Word Processing. This function will allow the operator to edit before printing, move paragraphs, rearrange words, and delete and insert text as desired. The operator can also set up templates for recurring reports. (14:--)

Calendar. The individual calendar simulates a desk calendar on screen and helps organize time. The operator can enter appointments, suspense lists, due dates, or a tickler file on accounts. (14:--)

Graphics. The graphics package will allow the user to build charts, graphs, and slides. Present systems can provide up to six colors. (14:--)

ADDITIONAL CONSIDERATIONS

Printers. Because the IFF turns out a variety of documents, including business letters, formal proposals, bills, reports, charts, and checks, the organization requires a quality printer. Because of the volume of work and the recipients of the correspondence, the IFF should consider choosing an ink jet or laser system vs a dot-matrix printer for letter-quality correspondence. (14:--)

Modem. The modem is designed to give the computer a telephone interface. This function would allow IFF fundhandlers to input data directly to the data base of the accountant. (14:--)

COMPARING COSTS

The hardware purchase will be heavily driven by financial considerations. After the appropriate software is selected, the compatible hardware equipment selection can be narrowed to four avenues of expense levels. The author does not endorse any commercial brand of computer product, but will mention specific trademark names only for informational reference:

- The extreme on the expensive side would be an IBM PS/2, which would cost out at approximately \$25,000 for the state of the art system. This system would probably never require any additional equipment added on. (11:--;23:--)
- The middle priced, but yet relatively expensive system is the Macintosh II or Compaq. The system, including a laser printer could be acquired for approximately \$10,000.(15:--;25:--)
- The next least expensive vendors to consider for the IFF would be Tandy, Commodore and Zenith.(11:--)
- The final category is commonly called commercially as "clones." While the initial expense will probably be less than the products in the previous three categories, so is capability, reliability, and maintenance support.(11:--)

There will be trade-offs with each of these systems and the actual costs will vary with individual vendors.

ADDITIONAL INFORMATION

Allowing that this equipment will be new to the IFF, the author will include several thoughts to consider after the purchase has been made, regardless of the actual commercial brand selected.

- To protect the system from surges on the power line, the equipment should be plugged into a surge suppressor. This will protect the circuitry, disk drives, and printer from damage by power surges. Any stray electrical charge that contacts the system may cause permanent damage and erase files. During electrical storms, a prudent operator will unplug the system from the electrical source.
- If the area will be carpeted, anti-static mats and/or spray may be used. The area must be dust-free as possible. Foreign particles can damage computer equipment. Dust covers are recommended for covering the equipment when the system is not in operation.
- The environment should be maintained within the vendor's recommended operating temperatures to preclude equipment malfunctions and/or loss of data and programs.
- Back-ups should be made as soon as possible. A back-up is a complete copy of a diskette, disk, or tape. During the course of normal operation, accidents do occur and a diskette can be accidentally ruined. By having a back-up, the operator has insurance against the loss of information that may be vital to the operation.

THE CONTRACT

Requests for proposals (RFP's) are commonly used by companies when selecting equipment. A RFP is a written report specifying your needs and requesting a proposed solution from vendors. Vendor reliability is an ordinary concern of office equipment purchasing that takes on new meaning in the computer environment. Because the technology is growing at an extraordinary rate, many manufacturers have only been in business a short time. (13:98) Quality and reliability are important in judging a vendor's performance. In gauging quality, the IFF will need to determine how well the system runs, and if it has any notable flaws. (12:14) The IFF should consider this as means to finding which vendors can fulfill the organizational needs at the most economical price. The level of service provided is also important. Computer vendors typically offer less advice and maintenance than vendors of other office equipment. (10:50) Computers are both complex and relatively expensive. The amount of backup that a manufacturer can afford to offer is limited. (23:--) The IFF should get assurance that service will be available, however, and that the manufacturer is responsive. Normally, an 800 service number will be provided. Call the number before making a final decision to insure that a response will be forthcoming in a crisis. (23:--)

There's plenty of work involved in preparing an RFP, and each base has unique characteristics. After complying with the requirements in AFR 176-series regulations (NAF Responsibilities, Policies, and Practices), the IFF might shortstop potential problems by consulting with the base budget and contracting officers. The final report should address specific needs and ask how the vendor will solve the problem. After the IFF identifies a few products that might fit the requirements, it's time to talk to salespeople, see demonstrations, and test equipment.

Installation and service have traditionally been the weakest areas of the computer market. (12:145) More attention is now being focused here, largely due to growing acceptance of the machines and the participation of the manufacturers who have experience in selling office products. (23:--) Computer installation is meant to be simple, and in many cases is. Some caution should be taken in establishing interfaces; the most common occurring with printers and modems. (25:--) With printers, it is important to insure that the computer is, in fact, capable of driving the chosen printer. A reliable vendor will provide proper guidance in achieving system compatibility with the printer as well as the modem.

This chapter presented an overview of the options available for consideration in choosing the right data automation equipment for the IFF. The organization will make a smarter choice by using the technical information provided in this chapter. The author intended to show that while the initial cost of a system may appear quite low, the addition of necessary software, and peripherals can raise the ante considerably. Further, the cost can be indirectly increased in computer down-time unless the IFF thoroughly investigates vendor and manufacturer service reliability. The bottom line is that a vendor may try to sell the product that's available to an unwary customer, whether or not it completely meets the needs of the organization.

Chapter Six

FUNDING

In today's and tomorrow's fiscal environments, the responsive solution can be constrained by the cost of that solution. Thus, a useful system also could be called an affordable one. Some of the hidden costs of data automation include:

- Disks/diskettes
- Software upgrades
- Technical support
- Printer supplies
- Consumable supplies
- Training
- Cables
- Hardware upgrades
- Equipment repair
- Time

FUNDING OPTIONS

With fiscal constraints recognized as a limiting factor in the transition to data automation, the IFF should pursue the following avenues for funding relief:

- In accordance with Chapter 2 of AFR 176-1, the Air Force Welfare Board (AFWB) is responsible for the approval and use of NAFI monies. The board is authorized to receive, allocate, distribute, and redistribute assets into, within, and out of its area of control. By virtue of its status of a special NAFI, the IFF is eligible to solicit funding for equipment from the AFWB.
- The MAJCOM commander has the authority to redistribute excess NAFI funds within the command. The IFF could appeal through appropriate channels to CINCMAC.
- The installation commander has the authority to redistribute excess NAFI funds at the base level. The IFF could appeal for funding through NAFFMO to the Andrews Base Commander.

- The IFF wholly supports the mission of the 89th Military Airlift wing. The IFF custodian could explore the possibility of the Wing Budget supporting the purchase of the equipment using authorized Operations and Maintenance (O&M) funds. The wing would then, of course, own the purchased equipment used for mission support by the IFF personnel.
- Finally, the IFF could investigate purchasing the equipment by establishing a grant or low-cost or no-cost loan, using the IFF assets as collateral. The loan repayment would require special considerations including possibly raising prices for service purchases or actively investing current assets to enable profits to offset loan costs.

The preceding sequence of possible events may not contain the exact final answer to solving the funding question. Whether the solution surfaces from one of, or a combination of, the proffered solutions, the fact remains that the IFF could benefit in numerous ways by choosing to automate its current and future functions. The author intended to facilitate the background requirements and questions of a major transition through research and forethought. Computer technology is here to stay. The modern military must use this technology effectively. Applications in addition to those recommended by the author will certainly evolve as the equipment and its capabilities are assimilated and allowed to mature in the IFF. This project should open any doors of resistance for a unique organization with an important mission.

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